CLAIMS

1. An optical information recording medium comprising a substrate and at least two information layers formed on the substrate, the information layer being formed of a thin film showing a change that can be detected optically by light beam irradiation,

wherein a separating layer that is transparent to a wavelength of the light beam is formed between the information layers,

each information layer comprises a sector area having sector address portions and data areas for recording information signals, the sector address portion and the data area being divided in a circumferential direction, and

at least one of the information layers is provided with a management area for recording identification information about an amount of dislocation between the sector address portions of the respective information layers in the circumferential direction.

2. The optical information recording medium according to claim 1, wherein the management area is provided with a same form of guide groove as the data area and located close to the data area.

3. The optical information recording medium according to claim 1, wherein each information layer is provided with a sector position identifier for identifying positions of the sector address portions of the respective information layers, the sector position identifier having a certain relationship to the sector area in the circumferential direction.

4. An optical information recording medium comprising a substrate and at least two information layers formed on the substrate, the information layer being formed of a thin film showing a change that can be detected optically by light beam irradiation,

wherein a separating layer that is transparent to a wavelength of the light beam is formed between the information layers,

each information layer comprises a sector area having sector address portions and data areas for recording information signals, the sector address portion and the data area being divided in a circumferential direction, and

identification information about an amount of dislocation between the sector address portions of the respective information layers in the

circumferential direction is recorded on at least one of the information layers by utilizing a difference in state that can be detected optically in a predetermined pattern different from information signals of the data portion.

5. An optical information recording medium comprising a substrate and at least two information layers formed on the substrate, the information layer being formed of a thin film showing a change that can be detected optically by light beam irradiation,

wherein a separating layer that is transparent to a wavelength of the light beam is formed between the information layers, and

each information layer comprises:

a sector area having sector address portions and data areas for recording information signals, the sector address portion and the data area being divided in a circumferential direction;

a management area on which a type of information layer or recording conditions is written, and

a sector position identifier for identifying a sector position, having a certain relationship to the sector area of the information layer in the circumferential direction.

6. An optical information recording medium comprising a substrate and at least two information layers formed on the substrate, the information layer being formed of a thin film showing a change that can be detected optically by light beam irradiation,

wherein a separating layer that is transparent to a wavelength of the light beam is formed between the information layers, and

among the information layers, at least the information layer on a light incident side is provided with a management area for recording identification information showing that information is recorded on an entire area of the information layer.

7. The optical information recording medium according to claim 6, wherein the recording on an entire area includes recording dummy data having a predetermined pattern on a preliminary signal area located close to the data area after completion of recording information signals on the entire data area of the information layer.

8. A recording method for an optical information recording medium comprising:

recording information signals on the optical information recording medium,

the optical information recording medium comprising a substrate and at least two information layers formed on the substrate, the information layer being formed of a thin film showing a change that can be detected optically by light beam irradiation,

wherein among the information layers, information signals are recorded on a target information layer after confirming that information signals have been recorded on an entire area of the information layer on a light incident side.

9. The recording method according to claim 8, wherein the recording on an entire area includes recording dummy data having a predetermined pattern on a preliminary signal area located close to the data area after completion of recording information signals on the entire data area of the information layer.

10. The recording method according to claim 8, wherein the recording on an entire area is confirmed by identification information showing that the recording on an entire area is performed, which is provided in any one of the information layers.

11. A recording method for an optical information recording medium comprising:

recording information signals on the optical information recording medium,

the optical information recording medium comprising a substrate, at least two information layers formed on the substrate, and a separating layer formed between the information layers; the information layer being formed of a thin film showing a change that can be detected optically by light beam irradiation, the separating layer being transparent to a wavelength of the light beam, and each information layer comprising a sector area having sector address portions and data areas for recording information signals, the sector address portion and the data area being divided in a circumferential

direction,

wherein each information layer further comprises a sector position identifier having a certain relationship to the sector area in the circumferential direction, and

dislocation between the sector position identifiers of the respective information layers is detected, so that identification information about an amount of dislocation between the sector address portions of the respective information layers in the circumferential direction is obtained and the identification information is recorded on at least one of the information layers.

12. The recording method according to claim 11, wherein the identification information is recorded as sub-information that is different from data information.

13. A recording method for an optical information recording medium comprising:

recording information signals on the optical information recording medium,

the optical information recording medium comprising a substrate, at least two information layers formed on the substrate, and a separating layer formed between the information layers; the information layer being formed of a thin film showing a change that can be detected optically by light beam irradiation, the separating layer being transparent to a wavelength of the light beam, and each information layer comprising a sector area having sector address portions and data areas for recording information signals, the sector address portion and the data area being divided in a circumferential direction,

wherein among the information layers, a signal is recorded on continuous tracks in the sector area of the information layer on a light incident side with at least one sector being left unrecorded,

a signal is reproduced from the information layer that is further from the information layer on the light incident side, and

a time difference between a pulse-fall point of the sector address portion of the distant information layer, corresponding to the unrecorded portion of the information layer on the light incident side, and a pulse-rise point of the recorded portion of the information layer on the light incident

side is calculated, so that identification information about an amount of dislocation between the sector address portions of the respective information layers in the circumferential direction is obtained and the identification information is recorded on at least one of the information layers.

14. The recording method according to claim 13, wherein the identification information is recorded as sub-information that is different from data information.

15. A recording method for an optical information recording medium comprising:

recording information signals on the optical information recording medium,

the optical information recording medium comprising a substrate, at least two information layers formed on the substrate, and a separating layer formed between the information layers; the information layer being formed of a thin film showing a change that can be detected optically by light beam irradiation, the separating layer being transparent to a wavelength of the light beam, and each information layer comprising a sector area having sector address portions and data areas for recording information signals, the sector address portions and the data area being divided in a circumferential direction,

wherein a guide groove in the data area is formed of a wobbled groove wobbling in a predetermined cycle, and

an amount of wobble is measured, so that identification information about an amount of dislocation between the sector address portions of the respective information layers in the circumferential direction is obtained and the identification information is recorded on at least one of the information layers.

16. The recording method according to claim 15, wherein the identification information is recorded as sub-information that is different from data information.

17. A recording/reproducing apparatus for an optical information recording medium, performing recording/reproduction of information signals on the optical information recording medium,

the optical information recording medium comprising a substrate, at least two information layers formed on the substrate, and a separating layer formed between the information layers; the information layer being formed of a thin film showing a change that can be detected optically by light beam irradiation, the separating layer being transparent to a wavelength of the light beam, and each information layer comprising a sector area having sector address portions and data areas for recording information signals, the sector address portion and the data area being divided in a circumferential direction,

the recording/reproducing apparatus comprising:

a sector dislocation identifying means for detecting an amount of dislocation between the sector areas of the respective information layers in the circumferential direction;

a gate generating means for controlling timing for correcting fluctuation in a reproduced signal, caused by an effect of a recorded state of each information layer, based on the detected dislocation amount, and

a reproduced signal correcting means for correcting a reproduced signal in accordance with a gate signal from the gate generating means.

18. The recording/reproducing apparatus according to claim 17, wherein the reproduced signal correcting means switches amplification gain of a reproduced signal in accordance with the gate signal.

19. The recording/reproducing apparatus according to claim 17, wherein the reproduced signal correcting means switches a slice level of a reproduced signal in accordance with the gate signal.

20. The recording/reproducing apparatus according to claim 17, wherein at least one of the information layers is provided with a management area for recording identification information about the amount of dislocation, and the sector dislocation identifying means demodulates the identification information on the management area to detect the amount of dislocation.

21. The recording/reproducing apparatus according to claim 20, wherein the identification information is recorded on the management area as sub-information that is different from data information.

22. The recording/reproducing apparatus according to claim 17, wherein each information layer is provided with a sector position identifier for identifying positions of the sector address portions of the respective information layers, the sector position identifier having a certain relationship to the sector area in the circumferential direction, and the amount of dislocation is determined by dislocation between the sector position identifiers of the respective information layers.

23. The recording/reproducing apparatus according to claim 17, wherein the amount of dislocation is determined in the following manner:

among the information layers, a signal is recorded on continuous tracks in the sector area of the information layer on a light incident side with at least one sector being left unrecorded;

a signal is reproduced from the information layer that is further from the information layer on the light incident side, and

a time difference between a pulse-fall point of the sector address portion of the distant information layer, corresponding to the unrecorded portion of the information layer on the light incident side, and a pulse-rise point of the recorded portion of the information layer on the light incident side is calculated.

24. The recording/reproducing apparatus according to claim 17, wherein a guide groove in the data area is formed of a wobbled groove wobbling in a predetermined cycle, and the amount of dislocation is determined by measuring an amount of wobble.

25. A recording/reproducing apparatus for an optical information recording medium, performing recording/reproduction of information signals on the optical information recording medium,

the optical information recording medium comprising a substrate, at least two information layers formed on the substrate, and a separating layer formed between the information layers; the information layer being formed of a thin film showing a change that can be detected optically by light beam irradiation, the separating layer being transparent to a wavelength of the light beam, and each information layer comprising a sector area having sector address portions and data areas for recording information signals, the sector address portion and the data area being divided in a circumferential

direction,

the recording/reproducing apparatus comprising:

a sector dislocation identifying means for detecting an amount of dislocation between the sector areas of the respective information layers in the circumferential direction;

a gate generating means for controlling timing for correcting fluctuation in recording power, caused by an effect of a recorded state of each information layer, based on the detected dislocation amount, and

a power switching means for switching recording power in accordance with a gate signal from the gate generating means.

26. The recording/reproducing apparatus according to claim 25, wherein at least one of the information layers is provided with a management area for recording identification information about the amount of dislocation, and the sector dislocation identifying means demodulates the identification information to detect the amount of dislocation.

27. The recording/reproducing apparatus according to claim 26, wherein the identification information is recorded on the management area as sub-information that is different from data information.

28. The recording/reproducing apparatus according to claim 25, wherein each information layer is provided with a sector position identifier for identifying positions of the sector address portions of the respective information layers, the sector position identifier having a certain relationship to the sector area in the circumferential direction, and the amount of dislocation is determined by dislocation between the sector position identifiers of the respective information layers.

29. The recording/reproducing apparatus according to claim 25, wherein the amount of dislocation is determined in the following manner:

among the information layers, a signal is recorded on continuous tracks in the sector area of the information layer on a light incident side with at least one sector being left unrecorded;

a signal is reproduced from the information layer that is further from the information layer on the light incident side, and

a time difference between a pulse-fall point of the sector address

portion of the distant information layer, corresponding to the unrecorded portion of the information layer on the light incident side, and a pulse-rise point of the recorded portion of the information layer on the light incident side is calculated.

30. The recording/reproducing apparatus according to claim 25, wherein a guide groove in the data area is formed of a wobbled groove wobbling in a predetermined cycle, and the amount of dislocation is determined by measuring an amount of wobble.

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